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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/998,635

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Soon Bae Yang

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03/19/2003

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EXAMINER

MCCLOUD, RENATA D

ART UNIT

PAPER NUMBER

2837

DATE MAILED: 03/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/998,635

Applicant(s)

YANG ET AL

Examiner

Renata McCloud

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1-4, 6, 7, and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Chalupa et al (U.S. Patent 6,336,865).

#### ***Chalupa et al teach:***

**Claim 1:** a method of controlling an operation of a motor, comprising the steps of: detecting a phase voltage value and a phase current value applied to the motor between forward and backward revolution sections of the motor (e.g. Col. 5:34-37), calculating a phase resistance value based on the detected phase voltage and current values (e.g. Col. 5: 37-53); and controlling the operation of the motor by controlling a voltage applied to

the motor in accordance with the calculated phase resistance value (e.g. Col. 5:54-65).

**Claim 2:** the motor is a sensorless brushless direct current motor (e.g. Col. 2:5-11).

**Claim 3:** the motor is used for a washing machine (e.g. Col. 1: 11-18).

**Claim 4:** the voltage applied to the motor is proportional to a size of the phase resistance value (e.g. Col. 5:54-65).

**Claim 5:** calculating the phase resistance value every predetermined time when the motor stops and controlling the voltage applied to the motor using an average value of the calculated phase resistance values (e.g. Fig. 3; Col. 7:10-28).

**Claim 6:** the phase resistance value is calculated by dividing the phase voltage by the phase current when an operational frequency of the motor approaches '0' (e.g. Col 3: 5-15; Fig. 3).

**Claim 7:** a method of controlling an operation of a motor, comprising the steps of: detecting a phase voltage value and a phase current value applied to the motor on a middle section between forward and backward revolution sections of a sensorless brushless direct current motor (e.g. Col. 5:34-37; Col. 2:5-11) built inside a washing machine (e.g. Col. 1: 11-18); calculating a phase resistance value based on the detected phase voltage and current values (e.g. Col. 5:54-65), and controlling the operation of the motor by controlling a voltage applied to the motor in accordance with the calculated phase resistance value (e.g. Col. 5:54-65).

**Claim 8:** the voltage applied to the motor is proportional to a size of the phase resistance value (e.g. Col. 5:54-65).

**Claim 9:** calculating the phase resistance value every predetermined time when the motor stops (e.g. Fig. 3; Col. 7:10-28), and controlling the voltage applied to the motor using an average value of the calculated phase resistance values (e.g. Fig. 3; Col. 7:10-28).

**Claim 10:** the phase resistance value is calculated by dividing the phase voltage by the phase current when an operational frequency of the motor approaches '0' (e.g. Col 3:5-15; Fig. 3).

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 11-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Nashiki et al (U.S. Patent 5,896,019).

***Nashiki et al teach:***

**Claim 11:** An apparatus for controlling an operation of a motor, comprising: a revolution section detect unit (Fig. 10:9) calculating an operational frequency of the motor based on phase voltage and current values applied to the motor and outputting a section detect signal by detecting an operational section of the motor in accordance with the calculated operational frequency (e.g. Fig. 15; Col. 3:15-32); a calculation unit receiving the phase voltage and current values in accordance with the section detect signal so as to calculate a phase resistance value (e.g. Col. 2:34-44), a speed/position calculation unit calculating a rotor position of the motor by

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detecting the calculated phase resistance value and the phase voltage and current values and calculating a speed of the motor (e.g. Fig. 10:12; Col. 1:44-55), and a voltage command generator generating a voltage command to apply a voltage to the motor based on the rotor position and the speed of the motor ( Fig. 11:V).

**Claim 12:** an operational section is a middle section between forward and backward revolution sections of the motor (e.g. Col. 3:55-63).

**Claim 13:** calculating the phase resistance value at a middle section between forward and backward revolution sections of the motor (Col. 5: 3-44).

**Claim 14:** the motor is a sensorless brushless direct current motor (e.g. Fig. 11).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 15-18 rejected under 35 U.S.C. 103(a) as being unpatentable over Nashiki et al (U.S. Patent 5,896, 019) in view of Chalupa et al (U.S. Patent 6,366,865).

**Claim 15:** Nashiki et al teach the limitations of claim 11. Referring to claim 12, Nashiki et al do not teach a motor is used for a washing machine. Chalupa et al teach a motor used for a washing machine (e.g. Col. 1: 11-18).

**Claim 16:** Nashiki et al teach the limitations of claim 11. Referring to claim 16, Nashiki et al do not teach the voltage applied to the motor is proportional to a size of the phase resistance value. Chalupa et al teach the voltage applied to the motor is proportional to a size of the phase resistance value (e.g. Col. 5:54-65).

**Claim 17:** Nashiki et al teach the limitations of claim 11. Referring to claim 17, Nashiki et al do not teach calculating the phase resistance value every predetermined time and calculates an average value of the calculated phase resistance value. Chalupa et al teach calculating the phase resistance value every predetermined time and calculates an average value of the calculated phase resistance value (e.g. Fig. 3; Col. 7:10-28).

**Claim 18:** Nashiki et al teach the limitations of claim 11. Referring to claim 18, Nashiki et al do not calculating the phase resistance value by dividing the phase voltage by the phase current when an operational frequency of the motor approaches '0'. Chalupa et al teach the calculating the phase resistance value by dividing the phase voltage by the phase current when an operational frequency of the motor approaches '0' (e.g. Col 3: 5-15; Fig. 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the control apparatus taught by Nashiki et al to include the teachings of Chalupa et al as explained above. The advantage of this would be a control apparatus with a more accurate estimation of resistance.

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***Conclusion***


7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renata McCloud whose telephone number is (703) 308-1763. The examiner can normally be reached on Mon.-Thurs and every other Fri. from 8 am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Nappi can be reached on (703) 308-3370. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Renata McCloud  
Examiner  
Art Unit 2837

RDM  
March 17, 2003

  
**MARLON T. FLETCHER**  
**PRIMARY EXAMINER**